VETERINARY SPECIALTY CENTER

2051 Waukegan Road, Bannockburn, IL 60015
847.459.7535 Fax 847.808.8900
Email: surgery@vetspecialty.com

Patellar Luxation Correction

What is it?

The patella or kneecap is a small bone at the junction of the quadriceps muscles of the thigh and tendon attaching to the tibia (shin). It helps with the knee's function and keeps the leg alignment straight. Patellar luxation is a temporary or permanent dislocation of the kneecap, which causes abnormal cartilage wear, arthritis, and stress of other ligaments of the knee. Dogs of any age or breed may have patellar luxations, but small and toy breeds are frequently affected. It is usually a congenital developmental disease (80%) but it can result from trauma to specific soft tissue or skeletal structures. Patellar luxation affects both knees in 50% of all cases, although one knee may have a greater degree of lunation than the other. Often the condition worsens over time.

The patella normally rides in the groove at the end of the femur (Figure 1a). The patellar tendon attaches on the tibial crest, a bony prominence located on the tibia, just below the knee. The quadriceps muscle, the patella and its tendon form the "extensor mechanism" that causes the leg to straighten and are normally well aligned with each other. Patellar luxation is a condition where the patella rides outside the femoral groove when the stifle is flexed (Figure 1b). It can be further characterized depending on whether the patella rides on the inner (medial) or on the outer (lateral) aspect of the stifle and how temporary (or permanent) the lunation is. Patellar luxation can occur in cats as well.

Grades of Patellar Luxation

- **Patients with grade I luxations** (patella unstable but remains inside of the trochlear groove most of the time) may show lameness with activity (usually by carrying the limb for several steps or minutes) and are not lame at other times. While generally not problematic, some of these patients can be very painful when they are not used to the patella luxating out of place.
- **Patients with grade II luxations** (patella luxates out of position but will reduce or go back to the proper position by itself) occasionally carry the limb up for a few steps and may be seen shaking or extending the leg prior to regaining full use. Some patients even appear to "improve" when their luxation progresses from grade I to grade II. As the disease continues to cause arthritis and rotation at the knee, this lameness becomes more frequent and eventually becomes continuous.
- Lameness is frequent **in patients with grade III luxations** (patella usually remains luxated but can be reduced). Often ACL tears are resultant in patients with grade III luxations due to the stress on the ACL with the knee constantly in rotation.
- **Patients with grade IV luxations** (permanently luxated) tend to walk in a "crouched" position because they are unable to extend the knee properly. ACL tears are often a cause of having a permanently luxated patella.

What Will Happen if Patellar Luxation is Left Untreated

Every time the kneecap rides out of its groove, cartilage (the normal lining within joints) is damaged, leading to osteoarthritis and associated pain. As the trauma continues, the kneecap may ride more and more often out of its normal groove, eventually exposing areas of bone. This can lead to chronic lameness and eventually, severe arthritis in the joint. The constant rotation on the knee caused by patella luxation can also lead to ACL tears and worsening lameness over time.

Not all patella luxations require surgical treatment. Your surgeon will discuss the different recommendations for your pet. It is important to recognize patella luxation is a problem with the alignment of the leg. Physical therapy is excellent for strengthening muscles but will not straighten out poor anatomical alignment.

Prognosis

1. About 95% of cases will heal with good function of the knee, recover most of their strength and range of motion and live a normal life. The lower the grade, the simpler the procedure and the better the outcome. Grade IV luxations often require significant physical therapy to improve their outcome but can do very well with surgery.
2. Osteoarthritis (degenerative joint disease) often progresses even with surgical treatment, but does not cause serious problems later in life.
3. Rarely, the ACL can tear 1-2 years after patella luxation surgery due to damage caused by the previously luxated patella. Earlier surgical intervention can help limit the amount of stress and damage on the ACL.

Post Operative Care

The surgeon who has operated on your pet will best be able to advise you and establish a personalized post-operative treatment plan. For example, pain medications are usually recommended for 1-2 weeks with suture removal occurring 10-12 days after the day of surgery.

First 6 weeks: Mostly room rest, short walks on a leash and light physical therapy. You will often recheck with your surgeon at 6 weeks for an exam and possible x-rays.

Weeks 6-12: Progressive increase in activity until the end of week 12. Physical therapy may be indicated to help your pet adjust to having a straight leg with normal alignment.

Procedure

- Surgical correction is indicated for most patients of any age affected with a lameness resulting from a patellar luxation. In some patients, a first surgical correction can be required as early as 4 months of age to allow proper development of the stifle structures. Most cases can be corrected using a combination of techniques, including but not limited to tibial crest transplantation (TCT), trochleoplasty and lateral capsular imbrication.

- TCT allows the function of the quadriceps mechanism to be re-established by aligning the tendon, patella, and muscle. A portion of the tibial crest bone is cut where the patellar tendon is attached. The patellar ligament is repositioned so it is properly aligned. Once in the new position, it stabilized with pins and/or wire.
- **Trochleoplasty**: Two commonly used techniques are trochlear wedge recession and trochlear block recession. They are used to deepen the trochlear groove to help the patella to track properly.

- **Lateral Capsular Imbrication:** It is used to shorten the stretched ligaments and give more support to the outside (lateral) aspect of the joint capsule to keep the patella in position.

- **Patelloplasty:** Typically seen in cats, the patella may be too wide to fit in the trochlear groove and needs to be reduced in width.

- Correction of abnormally shaped femurs and tibias is occasionally required in more extreme cases where the patella rides outside of its groove most or all the time. This procedure involves cutting the bone, correcting its deformation and stabilizing it with a bone plate.

- Generally speaking, higher-grade luxations require more procedures and have a longer recovery.